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# **Peacemaker 10x7 Dry Air Scrubber**

## **O&M Manual**



**For**

**BIG OX ENERGY  
DAKOTA CITY, NE**

Odor control made easy....

*Peacemaker®*

H<sub>2</sub>S CONVERTING/  
POLISHING DRY AIR SCRUBBERS

## AN ADVANCEMENT IN ODOR CONTROL TECHNOLOGY

PEACEMAKER® Dry Air Scrubbers provide two stage chemistry for the control of odors from hydrogen sulfide (H<sub>2</sub>S), mercaptans, ammonia, amines and other odors generated in wastewater collection and treatment systems. They are easy to use, effective and economic.

- Lift Stations
- Headworks
- Grit Rooms
- Sludge Processing

In what follows, when we say “odor” we mostly mean H<sub>2</sub>S. We know there are other reduced-sulfur and nitrogen-based compounds involved and we have planned for them, but H<sub>2</sub>S is the main culprit and is most important in discussion and design.

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## OUR DESIGN PRINCIPLE.....SIMPLICITY

**“The Best Solution Should be the Simplest, but Not Simpler.” — Albert Einstein**

Often it is the simplest solution that works the best. Complexity is the enemy of effective, long-term odor control. Too much fussing, too many bells and whistles spell trouble.

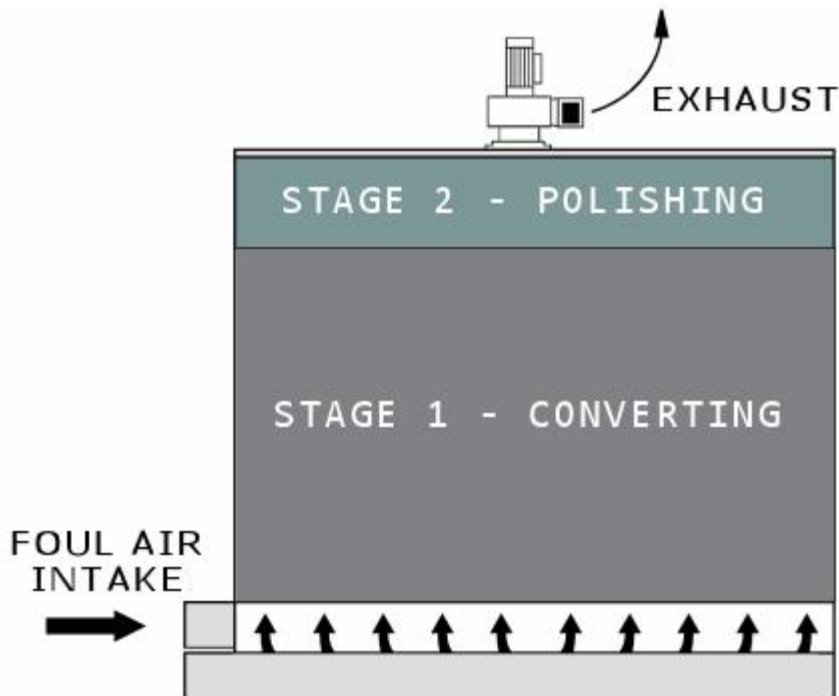
Peacemaker scrubbers are one or two vessel fixed-bed systems, containing two stages of media.

There is one moving part, a blower. Only one thing can happen – foul air goes in, clean air comes out. There are no chemicals to add and there is no maintenance to do for the service life of the scrubber. When your Peacemaker does need attention, the entire scrubber is replaced or the media is replaced, depending upon the size of the scrubber and whether you choose to lease, buy or a service contract. But no matter how simple and easy, odor control solutions must be effective to be worthwhile.

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## PEACEMAKER® SCRUBBERS GET THE JOB DONE

### STAGE ONE – PERSNICKETY® H<sub>2</sub>S CONVERTING® MEDIA



Converting technology uses a patented polymeric amine, formulated for maximum removal of H<sub>2</sub>S and volatile mercaptans. The combination of multiple amine sites and organophilic properties allows for fast, efficient removal of these problematic compounds. This chemistry reacts with H<sub>2</sub>S and mercaptans to form water-soluble and non-volatile poly sulfides that are readily biodegradable. In simple words, gaseous H<sub>2</sub>S is turned into a stable liquid polymer. All of our scrubber systems are designed to achieve a H<sub>2</sub>S reduction of 99% through the Stage 1 media bed.

**STAGE TWO – PERSNICKETY® POLISHING® MEDIA** Activated carbon does a very efficient job of scrubbing low levels of H<sub>2</sub>S and other malodors. 99% of the H<sub>2</sub>S and the majority of volatile mercaptans, organic amines and organic sulfurs are removed in the converting bed. With that being accomplished, the polishing bed will easily remove the remaining low level malodors. This results in complete and economic odor control.

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## CORROSION CONTROL

### IT ISN'T ALWAYS JUST ABOUT ODOR

Corrosion control is a substantial secondary benefit, and in some cases it is primary.  $H_2S$  accumulates in enclosed spaces. Turbulence releases it to atmosphere, but Henry's Law is in play, too. It is not unusual to find several hundred ppm of  $H_2S$  in enclosed spaces. It eventually forms sulfuric acid, a highly corrosive compound. In most cases,  $H_2S$  cannot simply be exhausted into a neighborhood. But when it is continuously drawn off and scrubbed, corrosion commonly reduces by ninety percent or more, and complaints stay in check.

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## SIZING PEACEMAKER® SCRUBBERS

**THERE ARE TWO ESSENTIAL QUESTIONS TO BE ANSWERED.**



**How much airflow is required?** Benefits accrue from moving only enough air to maintain a slight negative pressure. This will prevent fugitive malodors and provide the best economics. Higher-than-necessary airflow increases static pressure through the media bed and reduces residence time. A larger scrubber may be needed and cost would increase.

To calculate optimum airflow we must determine the potential for air displacement (e.g. gpm pumped into a wet well). Of course, if there is an air exchange requirement for confined space entry or a need for higher airflow for any other reasons, it can be accommodated.

How much H<sub>2</sub>S is in that air? This can be a difficult question to answer. It can be influenced by time of day, time of year, residence time, measuring techniques and numerous additional factors. Truth is it is hard to escape applying some judgment in making this determination. Experience helps, of course, but Peacemaker systems have built-in flexibility and scalability, which helps, too. Ultimately, the formula is simple: cfm airflow x ppm H<sub>2</sub>S = quantity of media required.

This is an important process, and we need to work together. We start with a review of “PEACEMAKER® Converting/Polishing Dry Air Scrubber Sizing Information.”

### AVAILABLE SIZES

When we have determined the quantity of media required, we simply match that need to the correct vessel size and add the right fan to provide desired airflow at the existing static pressure.

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## LEASE, BUY OR SERVICE CONTRACT

### Lease

The length of “term” for most PEACEMAKER® leases is one to three years. At the end of term, we provide a new scrubber, if you wish, and you return the old one to us, freight collect. If conditions change from one term to the next, we can change the new scrubber to match the new conditions. You will never be stuck with out-grown and useless equipment. In addition, our lease agreement is like our scrubbers — simple and straightforward.

### Buy

If your PEACEMAKER® needs to come from a capital budget, this is obviously the way to go. It will still be a great value. Lease or buy, labor and maintenance costs will be minimal. There just is not much to do once the scrubber is up and running besides enjoying the nice clean air and the very quiet phone.

### Service Contract

The length of “term” for most PEACEMAKER® service contracts is three to five years. With a service contract, H<sub>2</sub>S loadings and CFM would have to be well documented and we would guarantee the life of the scrubber system for the life of the service contract based on those levels.

Odor control made easy....

*Peacemaker*®

H<sub>2</sub>S CONVERTING/  
POLISHING DRY AIR SCRUBBERS

### Limited Warranty:

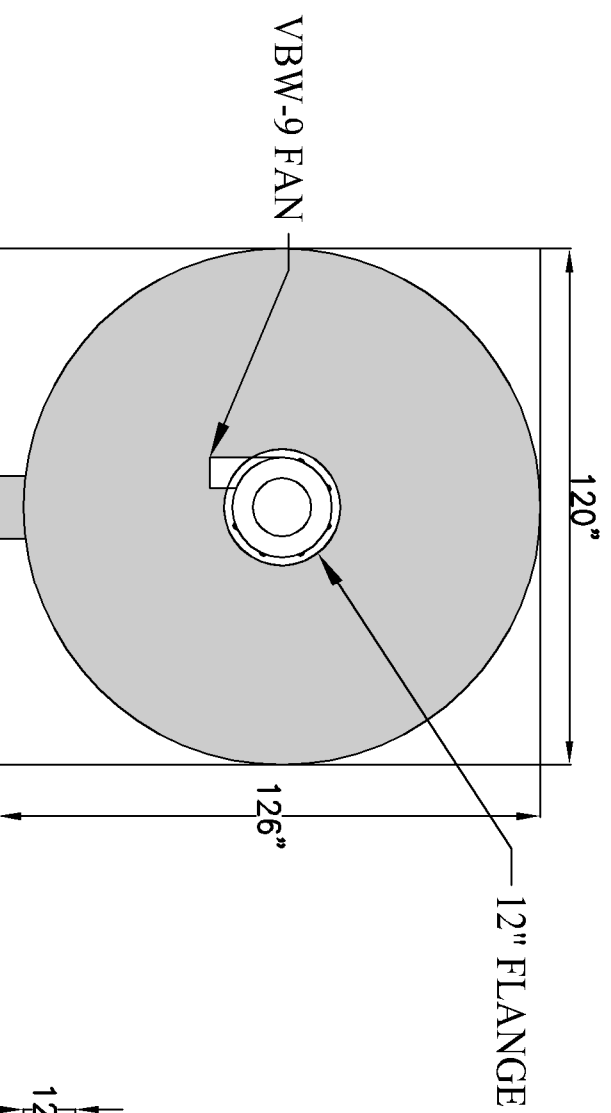
Our only obligation shall be to replace or pay for any material proved defective. Beyond the purchase price of materials supplied by us, we assume no liability for damages of any kind and the user accepts the product “as is” and without warranties, expressed or implied. The suitability of the product for an intended use shall be solely up to the user.

## PEACEMAKER® 10×7 CONVERTING SERIES SCRUBBER

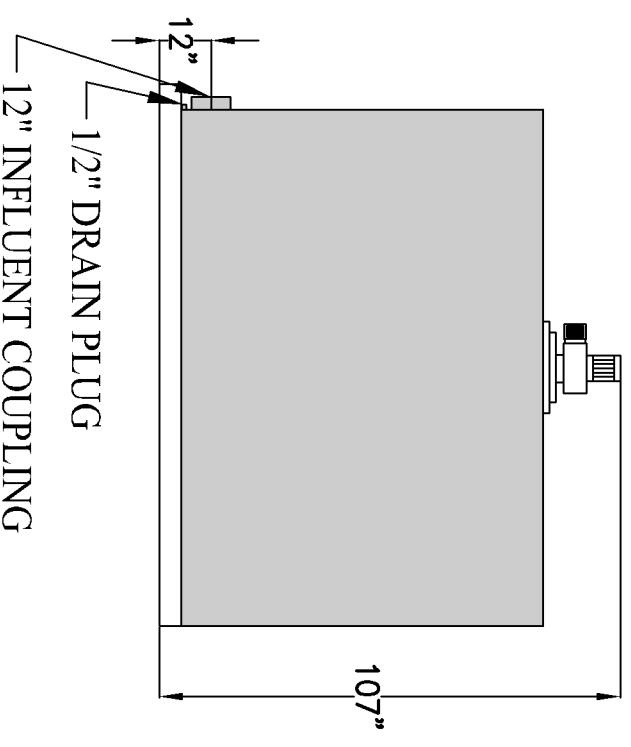
FAN	See "VBW-9 FAN SPECIFICATIONS" for details.
<b>PHYSICAL</b>	
Vessel	1.9 SG Black/White HDPE
Cover	1/4" Black/white ABS Plastic
Influent Coupling (Foul air intake)	12"
Lower Air Diffuser	3/16" Perforated HDPE with Coated Steel Support
Height (without fan)	92"
Diameter	120"
Media (maximum)	410 Cu-Ft
Foot Print	120"×126"
Charged Weight (maximum)	22,525 lbs.
Airflow (maximum)	1,750 CFM
Fan (maximum)	VBW-9
<b>MISCELLANEOUS</b>	
Storage/Use	Store and use away from acids and reducing agents. Do not add any chemicals to the scrubber other than those recommended by the manufacturer. Syneco Systems reserves the right to change specifications without prior notice. In no case will such changes have an adverse effect on the performance of the product.

# PEACEMAKER® CONVERTING SCRUBBER MODEL: 10X7 VBW-9 FAN

TOP VIEW



SIDE VIEW



Syneco Systems, Inc.

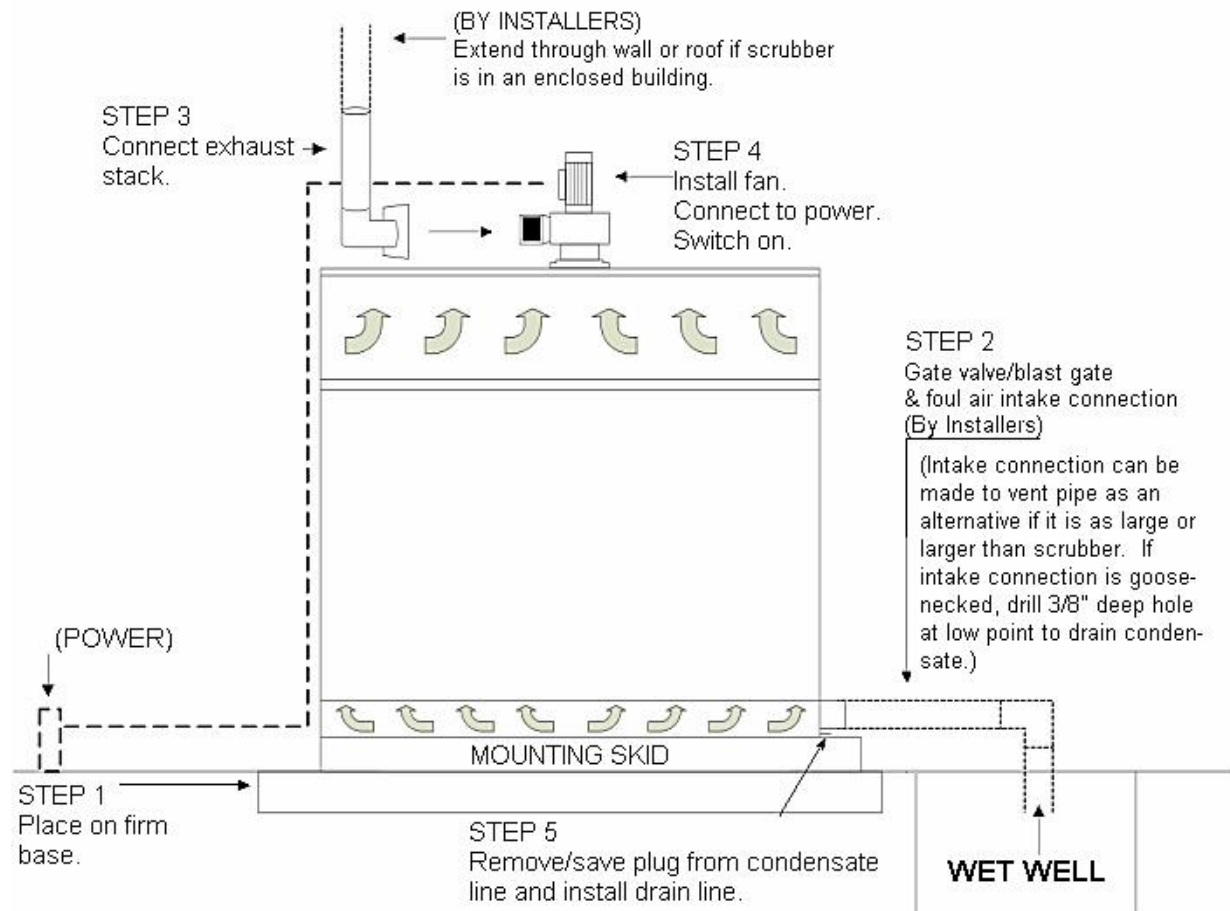
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web: [www.synecosystems.com](http://www.synecosystems.com)

## INSTALLATION & OPERATION OF THE PEACEMAKER® H2S Converting/Polishing DRY AIR SCRUBBER – (All Models)

Step 1.	Do not remove the PEACEMAKER® from the pallet. Place the entire assembly on a firm base.
Step 2.	Remove and save the cap from the foul-air intake. Install gate valve/blast gate if required, and connect into malodor source.
Step 3.	Connect exhaust stack. (If scrubber is in an enclosed building, continue stack through wall or roof.)
Step 4.	Install fan and connect it to the electrical power according to specifications and your local regulations. Switch on.
Step 5.	Remove/save the plug from the condensate line and install a drain line.







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DISCONNECT & RETURN	
Step 1.	Disconnect the power supply.
Step 2.	Disconnect the PVC pipes leading to the scrubber and reinstall the intake cap and condensate plug that were removed during installation.
Step 3.	To arrange for pick-up, call Syneco Systems, Inc. at 952-927-9215.



## PEACEMAKER DRY AIR SCRUBBER 10x7

### PEACEMAKER LOCATION

BIG OX ENERGY

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DAKOTA CITY, NE

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Installation Date:

Jan-17

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**Note:** The recommended C.F.M.'s may change over time according to conditions at the specific air scrubber location.

The Peacemaker should not require any maintenance. However, regular inspections should be performed to insure continued complete odor control.

### MONTHLY INSPECTIONS

- \* Inspect the fan and all electrical connections. Check the air flow.
- \* Inspect the scrubber tank and all plumbing connections.
- \* Check the condensate drain to insure that any condensate water is draining properly.

**SYNECO SYSTEMS, INC.**

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